

NEW EXAMPLES OF AMERICAN INDIAN SKULLS WITH LOW FOREHEAD.

By ALEŠ HRDLIČKA,

Assistant Curator, Division of Physical Anthropology, U. S. National Museum.

Since the writer's report in the latter part of last year^a upon modern Indian crania with low foreheads, the U. S. National Museum received two additional specimens of this character, one from a small mound in western Oregon and one from a tumulus in western Missouri. The two skulls, about neither of which there is any belief of great antiquity, appear, on cursory inspection, to possess their most distinctive feature, namely, the low front, to about the same degree, and they are also related as to the general type of the cranial form. But on close examination the two specimens are found to be very dissimilar, and there appear so many points of interest that it becomes desirable, in view of the importance of the still imperfectly understood question of low foreheads, to describe them.

THE OREGON SKULL.

This specimen, Cat. No. 248994, U.S.N.M., was discovered and given to the Museum by Mr. J. G. Crawford, a photographer and amateur archeologist of Albany, Oregon. Mr. Crawford dug it out, on February 8, 1908, from a low mound at Kings Point, Lincoln County, Oregon. The details of the find are rather meager. The fragments of the skull lay, with a few pieces of bones from other parts of the skeleton, in "a thoroughly burnt ground, about 4 feet from the surface, with a layer of sandstone pieces lying immediately above the human remains," while the soil "was the ordinary one of that locality." No impression arose that the burial might be one of great age.

The specimen is an imperfect calvarium, almost the entire left half of which, as well as the base and a larger part of the back, are lacking. A few unconnected fragments include the damaged chin part of the

^a Skeletal Remains suggesting or attributed to Early Man in North America, Bull. 33, Bur. Amer. Ethnol., Washington, 1907.

lower jaw. The bones are dirty brownish on the surface, yellowish-white to dull ocher-yellow on break, and in spots somewhat corroded or scaled; they are largely devoid of animal matter, but are not chalky or mineralized.

The skull is that of a male, of perhaps 60 years of age, the coronal and lambdoid sutures showing advanced synostosis. It is neither artificially nor accidentally deformed, and what is left of it shows no artefacts or disease. It was of moderate, but perhaps not subaverage Indian, internal capacity: the only external measurement bearing on its size that can be approximated is the length, which was near 19 cm. In shape the skull was dolichocephalic, or somewhere near the boundary of dolicho- and mesocephaly. Its walls are thicker than usual, the right parietal measuring above and along the squamous suture from 6 to 8 mm. There are signs of strong but not excessively developed muscularity. The ventral surface shows a dearth of brain impressions.

The principal features of interest about the specimen are its prominent supraorbital arcs, or crests, and a low forehead. The arcs extended over the whole distance from the glabella to the external angular process of the frontal bone on each side, though they are most pronounced over the median two-thirds of the supraorbital border, the space corresponding to the frontal sinuses. The more distal parts appear as if drawn forward through the development of the proximal; they doubtless expanded in consequence of the growth of the ridges proper. The frontal sinuses were, it is seen from the remnant of the one on the right, of large dimensions; about 1.5 cm. from the median line the right cavity measures 1.1 cm. antero-posteriorly by 1.8 cm. in length, and its original length was near 3 cm. The shallow depression which usually exists between the supraorbital ridges and the frontal bend is exaggerated. A dull low ridge extends over the middle third of the forehead in the median line—an external metopic crest seen often in varying grade in the dolichocephalic Indian. The ventral metopic crest is of moderate dimensions.

The prominent supraorbital ridges and the depression above them accentuate and to not a small extent create the appearance of lowness and slope of the forehead in this skull; without these features the fore part of the frontal bone could hardly be termed exceptional, when compared with average, dolichocephalic, Indian crania. When the skull is examined ventrally, a fair and uniform concavity, corresponding to quite well-developed frontal lobes of the brain and standing in no visible relation with the external protrusion is found. All this leads to the conclusion that this particular skull represents a type of a distinct class of crania with apparently low or sloping foreheads, a class of cases due in the main to an extraordinary development of the frontal sinuses.

In connection with this specimen it is possible to point out a lesson which relates to the importance of properly posing the object for a photograph. The Oregon skull was photographed before it was sent to the National Museum by one not familiar with the requirements of the case. The result was a too great inclination of the specimen, with consequent marked exaggeration of the frontal slope and protrusion of the supraorbital crest. The photograph is reproduced as fig. *a*, Plate XXVIII, while fig. *b* of the same plate gives a view of the same skull posed properly.

THE MISSOURI SKULL.

This specimen, No. 249679 U.S.N.M., was recovered from a mound in the proximity of the Missouri River, in western Missouri, in the earlier part of this year, by Mr. Gerard Fowke. Unfortunately, before being sent to the Museum, it became mixed with other bones, so that the exact locality where it was found can not be determined. It is certain, however, that there was nothing about the burial from which it proceeds to attract special attention, or it would have received better care at the hands of Mr. Fowke, who is an experienced explorer.

The specimen is very much unlike the one from Oregon just described and constitutes a type of another class of low foreheads. It is very defective, consisting of only a part of the vault, including about three-fifths of the frontal and a small portion of the top of each parietal. Judging from the supraorbital ridges, the skull was that of a male, and a complete obliteration ventrally of the coronal and what is present of the sagittal suture indicates an individual beyond the middle of adult life. The bones are yellowish in color, with numerous black spots dorsally, due probably to deposits of the black manganese dioxide, and are not chalky or mineralized.

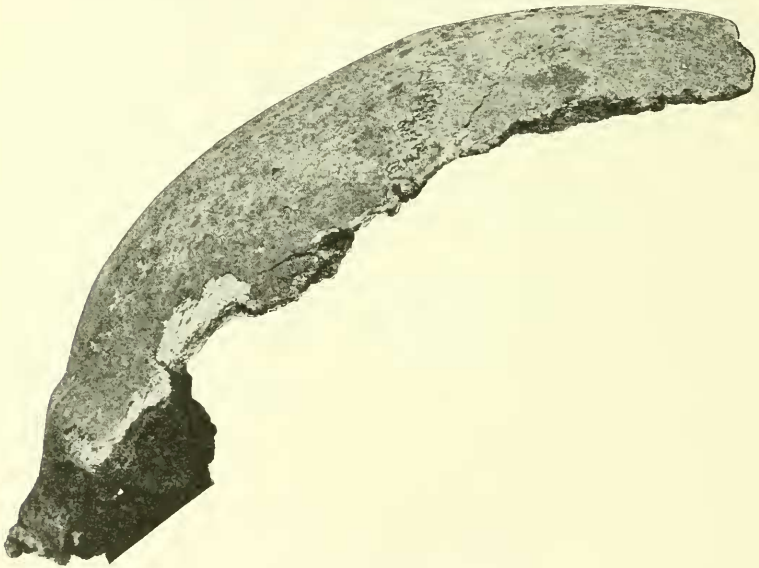
The skull was apparently narrow and long in form, and a nasion-bregma arc of 11.8 cm., besides other features, indicates that it was not of uncommonly small size. It was not deformed, and shows nothing pathological. It was, however, unusually delicate for a male, the thickness of the frontal bone ranging only between 3 and 5 mm. Were it not for its supraorbital ridges, it could easily be taken for a female skull.

The feature of particular interest about the specimen is a low forehead, and this, unlike what was found in the Oregon skull, is marked even better ventrally than dorsally. The frontal part of the brain itself in this case was decidedly low.

The supraorbital ridges are only of about the average masculine dimensions and extend over the nearer two-thirds of the border on each side. They are not prolonged into a complete crest, yet the bone

distad from them slants forward from the forehead proper, showing that the convexity of the frontal is not only lower, but also relatively somewhat more posterior than usual. The frontal sinuses are of only moderate size, the total length of the right cavity being 1.7 cm., its greatest antero-posterior diameter a little over 0.6 cm. There is no dorsal metopic crest in this case and the ventral one is of subaverage dimensions. The external bulge of the forehead is really quite fair, the defect being only the lowness.

Here then is a case in which a low forehead is a separate condition, independent of and not materially affected by any factors proper to the lower anterior portion of the frontal bone.



SIDE VIEW OF THE MISSOURI SKULL.

The two cases reported here are in the line of demonstration of the fact that the low or sloping appearing forehead is not morphologically a simple feature, due always to the same causes and having but one significance. They make it clear that there are at least two general, though perhaps in the end not unrelated, categories under which this peculiarity may be classed, one embracing the cases due to excessive development of the forestructures of the forehead proper, the other including those of defective development of the forehead part of the frontal bone itself, irrespective of anything else. When both conditions coexist, and that seems to be most often the case, they accentuate each other, and in extreme cases the results are such human cranial forms as the Neanderthal, Spy No. 1, or No. 8 from the Gilder mound in Nebraska.

The ultimate causes of each of the above defined categories of cases are not as yet clearly established. They are in all probability sometimes biological and sometimes pathological in nature, the first comprising reversions of form, subaverage development of the brain or the frontal lobes, and rarely, perhaps, a great development of the temporal muscles,^a while the latter may conceivably include pathological expansion of the frontal sinuses, a hyperplasia of the antero-inferior portions of the frontal bone, pathological defects of the frontal lobes, and such conditions of the frontal squama as would result in an abnormal resistance of the bone to the forward expansion of the growing brain. Regarding the last item, it must be borne in mind that the brain expands in the direction of least resistance, a fact amply demonstrated in the study of pathological as well as artificial deformations of the skull,^b and any increase in the normal resistance of the forehead part of the frontal bone before the growth of the brain has been completed—an increase such as may follow a premature closure of the metopic articulation—is bound to be followed by a less perfect development of the frontal convexity.

^a In the anthropoid apes and some of the lower old-world primates the extensive attachment and development of the temporal muscles has a marked effect on the formation and dimensions of the distal portion of the supraorbital crest. The orang shows this to the best advantage. It may be worthy of remark in this place that the skull of Dubois's pithecanthropus is much more related in this respect to the orang than to any of the other living anthropoids.

^b See in this connection writings on deformed skulls, an extensive bibliography of which can be found in the Catalogue of the Surgeon-General's Library, U. S. A., and particularly R. Virchow's "Ueber den Cretinismus, namentlich in Franken, und über pathologische Schädelformen"; Ges. Abh. z. wiss. Medicin, Svo, Frankfurt a. M., 1856, p. 891 et seq.